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SHORT REPORT

Endovascular Treatment of Acute on Chronic Mesenteric Ischaemia

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Introduction

Chronic mesenteric ischaemia is a condition caused by occlusion or stenosis of the cœliac axis, superior mesenteric artery (SMA) or inferior mesenteric artery. Multiple collaterals throughout the mesenteric vascular tree dictate that disease of multiple vessels is usually required before symptoms become apparent.

Operative treatment of mesenteric ischaemia is technically demanding and patients with this condition are often elderly, malnourished and have widespread vascular disease, which can result in a poor outcome. Many have reported success with endovascular techniques in patients with chronic, longstanding mesenteric angina. We report a case of acute on chronic mesenteric ischaemia presenting with bowel ischaemia at a clinically critical stage.

Case History

A 63-year-old lady presented with a three-week history of epigastric pain radiating to the back, associated with anorexia, weight loss and a raised leukocyte count (20.7×10^9/L). She went on to develop bloody diarrhoea three days after admission. Her past history included peptic ulcer disease, appendicectomy and cholecystectomy. She was a heavy smoker, hypertensive and hypercholestrolaemic.

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Computerised Tomography (CT) examination demonstrated aneurysmal change of the descending thoracic aorta and abdominal aorta to a maximum anteroposterior diameter of 4.0 cm at the hiatus with extensive thrombus lining the aortic lumen. The coeliac axis was occluded and there was a tight stenosis at the origin of the SMA.

Oesophagogastroduodenoscopy showed appearances of pan-gastritis and oesophagitis. Sigmoidoscopy demonstrated similar inflammatory changes of active colitis with granular, friable mucosa and one area of ulceration. Biopsy specimens showed changes suggestive of ischaemia.

Mesenteric angiography confirmed coeliac and inferior mesenteric artery occlusion with a severe stenosis (80%) at the origin of the SMA and a further, one-centimeter long, stenosed segment, two centimetres from the origin (Fig. 1).

Through a femoral approach using a 7 French long sheath and a guide wire (TAD II), the origin of the SMA was primarily stented using a 6×16 mm balloon expandable AVE stent. The distal stenosis was then angioplastied using a 6×20 mm balloon. Three thousand units of heparin and three hundred micrograms of isosorbide dinitrate were administered intra-arterially during the procedure. There was an excellent immediate angiographic result, with filling of the coeliac axis via collaterals (Fig. 2).

Following angioplasty and stent placement this patient was pain free. Oral feeding was commenced on day 1. She made an uneventful recovery and was discharged home on the 11th post-operative day.

Fig. 1. Lateral angiographic image of the abdominal aorta. There is a stenosis at the origin of the SMA and another stenosis distally. The coeliac axis is occluded.

Fig. 2. The catheter can be seen within the distal SMA. A stent has been placed at the origin of the SMA and the distal stenosis has been angioplastied with a good angiographic result.

Discussion

Surgical correction of chronic mesenteric ischaemia is well reported in the medical literature. Many operative approaches have been described in operative series including multiple vessel revascularisation,[1–5] single vessel SMA revascularisation[6] and transaortic endarterectomy.[3] Patients with this condition, however, are invariably poor surgical candidates who are elderly with severe multisystem vascular disease and malnutrition from long term "fear of food". For all procedures the in-hospital operative mortality is between 4.5 and 12.2%, with a post-operative complication rate of 45–54%.[1–6]

High peri-operative mortality rates mean that endovascular treatments are an attractive option in the treatment of chronic mesenteric ischaemia, most clearly in high-risk patients with short occlusions. Early and long-term results have been favourable in limited series.[7]

The presence of aneurysmal disease at the level of the superior mesenteric artery and thrombus within the lumen of the aorta, with potential for embolisation, rendered this lady a high-risk for surgical revascularisation. An endovascular procedure was thought to be the treatment option with least risk and the patient proceeded to angioplasty and stenting.

It is important to stress the need for appropriate patient selection. Mesenteric ischaemia that has progressed to bowel infarction must be operatively managed after appropriate resuscitation. In addition, careful vigilance during the post-operative period is vital in the successful management of these patients. Failure or thrombosis of the artery or stent may lead to a sudden deterioration of the patient and bowel infarction.

This case illustrates that in a high-risk surgical patient with atherosclerotic chronic mesenteric ischaemia that has progressed to a critical stage, endovascular treatment of multiple stenoses within the SMA can be carried out safely with a good angiographic result.

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